

REMARKS

Claims 1-4 and 8 continue to be pending in the application.

Claims 1-4 and 8 were again rejected under 35 U.S.C. 103(a) as being unpatentable over *Glenn et al.* in view of *Ychikoba*. This rejection is now considered moot in view of the current amendments to claims 1-4 and 8.

The Examiner states that the limitations of "wherein the bonding layer is applied to the conductor prior to a co-firing of said layers of ceramic material and then co-fired along, with said layers of ceramic material or the bonding layer is applied to the conductors and post-fired after an initial co-firing of said layers of said ceramic material is considered a product-by-process claim" and that "The limitation of the low temperature co-fired ceramic (LTCC) structure is considered a product-by-process claim"

Independent claim 1 is now amended to recite a method of making a multi-layer laminate ceramic structure comprising the steps of: providing a plurality of stacked layers of a predetermined type of co-fired ceramic material including metallization in predetermined patterns on and through said layers; depositing a plurality of exposed electrical conductors including leads at predetermined locations on said plurality of stacked layers; said conductors being of a metal which includes one or more additives to promote adhesion to said ceramic layer and which said conductors are deposited; depositing a bonding metal layer on top of said conductors at said predetermined locations of said leads and being of the same metal as said conductors, however devoid of said one or more additives so as to enhance bondability of the leads thereon; depositing the bonding metal layer on said conductors prior to a co-firing of said stacked layers of ceramic material and then co-firing the bonding metal layers along with said layers of ceramic material or depositing the bonding metal layer upon said conductors after an initial co-firing of said layers of ceramic material and then post-firing the bonding metal layer to the

conductors; and, bonding the leads to said bonding metal layer at said predetermined locations.

Dependent claim 8 now recites that the method of making a multi-layer ceramic structure according to claim 1 wherein the predetermined type of co-fired ceramic material comprises low temperature co-fired ceramic (LTCC) material.

With respect to LTCC (low temperature co-fired ceramic) material, such material is well known in the art and described, for example, in "*Wikipedia, a free encyclopedia*" (copy attached).

In view of the foregoing amendments and comments, it is submitted that the product-by-process rejection is now obviated and claims 1-4 and 8 are deemed to be in condition for allowance by virtue of the fact that the invention is now directed to a method of making a multi-layer laminate ceramic structure as opposed to an LTCC structure, *per se*.

Further and favorable action is therefore requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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Attachment: Copy of definition from Wikipedia, the free encyclopedia

Low temperature co-fired ceramic

From Wikipedia, the free encyclopedia

Low temperature co-fired ceramic (LTCC) is a well-established process that has been in use for many years in the microelectronics packaging industry. It is similar to the thick film hybrid process employed for multilayer ceramic capacitors and chip inductors. LTCC technology is especially used for wireless and high-frequency applications.

This technology presents advantages compared to other technologies: the ceramic could be fired below 900°C due to a special composition of the material. This permits the co-firing with high conductive materials (silver, copper and gold). LTCC also permit the ability to embed passive elements, such as resistors, capacitors and inductors into the ceramic package; hence the size of the components decreases.

Retrieved from "http://en.wikipedia.org/wiki/Low_temperature_co-fired_ceramic"

Category: Materials stubs

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